



ENVIRONMENTAL, HEALTH, AND SAFETY RESEARCH NEEDS AND PRIORITIZATION FOR ENGINEERED NANOSCALE MATERIALS

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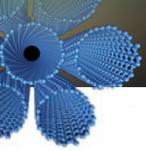
NEHI WORKING GROUP

- Multi-agency working group of the NSET Subcommittee
- Meets ~ monthly - 30 participants from 24 agencies
- Members from research and regulatory agencies
- Purposes
 - ❖ Provide forum for and promote exchange of information related to EHS research on nanotechnology among all agencies
 - ❖ Facilitate identification, prioritization, and implementation of EHS research on nanotechnology
- Formed in August 2003



NNI FUNDING OF EHS RESEARCH

- EHS research funded since NNI inception in 2001
- \$35 million in 2005 on EHS
- \$38 million in 2006
- \$44 million requested for 2007
- Does not include research on fundamental interactions of nanoengineered materials w/biosystems
- Does not include research to develop new instrumentation, metrology for measuring exposure to and for characterizing engineered nanomaterials



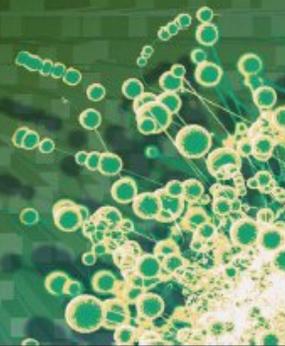
IMPORTANCE OF EHS RESEARCH

- Ensure that the introduction of nanoscale materials and products into commerce and environment reflects understanding of benefits and risk
- Identify and characterize potential hazards of engineered nanoscale materials and potential routes of exposure
- Develop methods to make nanoscale materials benign to environment, biota, and human health
- Develop approaches for risk management to realize benefits of nanomaterial responsibly



The National
Nanotechnology
Initiative

Environmental, Health,
and Safety Research Needs
for Engineered
Nanoscale Materials





DEFINITIONS

Engineered nanoscale materials, or nanomaterials, are those that have been purposefully manufactured or synthesized to have a size with at least one dimension in the range of approximately 1-100 nm and that exhibit unique properties determined by this size. *In this document, when the term “nanomaterials” is used alone, it refers to engineered nanoscale materials.*

The acronym “EHS” will be used in this document as shorthand for the collection of fields associated with the terms “environmental health, human health, animal health, and safety” when used in the context of risk assessment and risk management.



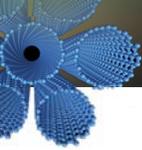
INTERAGENCY RESEARCH NEEDS DOCUMENT

- Identifies EHS research and information needs
- Reflects input from NNI regulatory and research agencies, industry, and various reports worldwide on EHS research priorities
- Identifies 5 categories of research with over 75 specific research and information needs
- Used to guide program and funding decisions by Federal agencies
- Used by regulatory agencies as component of risk assessment and management decision making
- Value to industry, universities and non-government research organizations



PRINCIPLES FOR PRIORITIZING EHS RESEARCH

- **Value of information**
 - ❖ Reduce uncertainty of risk
 - ❖ Broad knowledge
 - ❖ Use of the nanomaterial
 - ❖ Exposure potential
 - ❖ Leverage relevant existing data
- **Leverage international and private sector**
 - ❖ ANSI, ASTM, IEEE and other standards developers
 - ❖ International Organization for Standardization
 - ❖ Organization for Economic Cooperation and Development
 - ❖ European Union, United Kingdom, and German governments
 - ❖ International Council on Nanotechnology
 - ❖ Consultative Boards on Advancing Nanotechnology
- **Adaptive management**
 - ❖ Emerging R&D
 - ❖ Efficiency in use of research funds
- **Other - Public meeting/written comments**



NSET NEXT STEPS

- Prioritize the research needs
- Evaluate the current EHS portfolio of NNI
- Public meeting on needs and prioritization
- Perform “gap analysis”
- Coordinate and facilitate research programs among the NNI agencies to address priorities
- Regular updates of priorities

DYNAMIC, OPEN, TRANSPARENT PROCESS



Submit written comments to
http://www.nano.gov/public_ehs_html
by January 31, 2007



TODAY'S AGENDA

- **EHS Research Areas**
 - ❖ **Instrumentation, Metrology, and Analytical Methods**
Dianne Poster, PhD
 - ❖ **Nanomaterials and Human Health**
Sally Tinkle, PhD
 - ❖ **Nanomaterials and the Environment**
Philip Sayre, PhD
 - ❖ **Health and Environmental Surveillance**
Vladimir Murashov, PhD
 - ❖ **Risk Management Methods**
Richard Canady, PhD
- **Public Presentations**
 - ❖ **Pre-deadline request --15 minutes presentation - 10 minutes questions from NEHI**
 - ❖ **Post-deadline request - 5 minutes**



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